Claims

1.   A recording medium on which is recorded a plurality of titles between which branching is possible, and at least one application,

        wherein each application is a program written in a virtual machine-oriented programming language, and a life cycle in which each application can be executed by a virtual machine is specified in advance,

        each title includes a management table, and

        each management table shows one or more of the applications that has a life cycle bound to the title.

2.   The recording medium of Claim 1, wherein

        archive files are recorded on the recording medium, each archive file storing data and a program that constitute a given application,

        each application that has a life cycle bound to a title is expressed according to a combination of an identifier of the archive file that stores the application, and a title number that uniquely identifies the title.

3.   A playback apparatus that simultaneously performs playback of a title that includes a digital stream, and execution of an application, comprising:

        a module manager operable to control branching between a plurality of titles;

        a playback control engine unit operable to play a digital stream that belongs to one of a plurality of titles; and

        an application manager operable to, each time a branch between

titles occurs, perform run control so as to run an application that has a life cycle bound to a branch destination title and termination control so as to terminate an application that does not have a life cycle bound to the branch destination title.

4.   The playback apparatus of Claim 3, wherein

each title includes an application management table that shows at least one application that has a life cycle bound to the title, and

the run control by the application manager includes control for, when a branch between titles occurs, referring to the application management table of the branch destination title to judge whether an application exists that has a life cycle bound to the branch destination title, and, only when an application that has a life cycle bound to the branch destination title exists, running the application that has the life cycle bound to the branch destination.

5.   The playback apparatus of Claim 4, wherein

the run control by the application manager includes control for, when an application call has been made by an application being run in one title, referring to the application management table of the title to judge whether or not a call destination application has a life cycle bound to the title, and activating the call destination application only when the call destination application has a life cycle bound to the title.

6.   The playback apparatus of Claim 3, wherein

each title includes a table that shows at least one application

96

that has a life cycle bound to the title, and

the termination control by the application manager includes control for, when a branch between titles occurs, referring to the table of the branch destination title to judge whether any of applications that are running does not have a life cycle bound to the branch destination title, and only if one or more of the running applications does not have a life cycle bound to the branch destination title, performs control to terminate the one or more applications.

7.   The playback apparatus of Claim 3, wherein

the branch is realized by an application interface that instructs the playback apparatus to jump to a title,

the application includes a procedure to call the application interface, and

the module manager executes the branching in response to the virtual machine decoding the procedure.

8.   The playback apparatus of Claim 3, wherein

playback of the digital stream by the playback control engine includes trick playback and normal playback, and

the application manager starts run control of the application upon normal playback of the digital stream of the branch destination title starting.

9.   A program that causes a computer to simultaneously perform playback of a title that includes a digital stream, and execution of an application, wherein

the program causes the computer to, each time a branch between

97

titles occurs, perform run control so as to run an application that has a life cycle bound to a branch destination title and termination control so as to terminate an application that does not have a life cycle bound to the branch destination title.

5

10. A playback method that causes a computer to simultaneously perform playback of a title that includes a digital stream, and execution of an application, wherein

the playback method causes the computer to, each time a branch

10 between titles occurs, perform run control so as to run an application that has a life cycle bound to a branch destination title and termination control so as to terminate an application that does not have a life cycle bound to the branch destination title.